The MAC Flyer

NOVEMBER 1980

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The MAC Flyer

MILITARY AIRLIFT COMMAND

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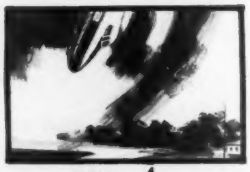

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You Can Tell by the Weather

When the frost is on the old pumpkin, we at *TMF* know it's time once again to kick off the annual MAC Flying Safety Writing Contest. Last year's response was really gratifying, and this year's guidelines are pretty much the same.

Who Can Enter - Anyone can enter, and if your entry qualifies for judging under the rules you will receive a colorful C.R. Terror "Fly Safe" T-shirt and a free one-year subscription to *The MAC Flyer* delivered right to your doorstep.

Prizes - Top three winners receive beautiful personalized desk sets. Honorable mention winners get handsome wall plaques attesting to their literary prowess. Only Air Force active and reserve forces military members and DAF civilians are eligible to receive an official prize, however, we can publish other winning entries for special category recognition.

Rules - Entries can be based on fact, fiction or fantasy and expressed in prose or even poetry. We've seen all manner of approaches from technical to philosophical and even humorous. All we ask is that there be a safety message embedded somewhere within the submission. Length should be between 1,000 and 3,000 words, which is about 6 to 14 double-space typed pages. Poetry usually is slightly shorter, but still should be of a respectable length (somewhere in the neighborhood of 70 to 100 lines).

Entries should be double-space typed and submitted in two copies, identified by title only. Attach a cover sheet with your name, address, unit, T-shirt size and a short biographical sketch that we can use for the "About the Author" blurb when we publish each winning story.

All manuscripts must be postmarked no later than 31 March 1981, so you have plenty of time to grind out a real flying safety classic and send it to:

Writing Contest
HQ MAC/IGFE
Scott AFB, IL 62225

Mishap with a Moral

Inaccurate weight and balance figures coupled with poor loading practices put the aircraft . . .

Out of Limits

Six additional passengers boarded the four-engine deHavilland DH-114 at St. Croix, Virgin Islands, bringing the total number of people on board to 21, including the two pilots. The next stop for the scheduled inter-island commuter was St. Kitts, another West Indies island 112 miles to the east. Loaders at St. Croix finished packing both the forward and aft cargo bins with baggage and other cargo and the aircraft taxied out for takeoff about 0930. The weather was sunny and warm with light winds coming off the Caribbean.

According to several witnesses, the aircraft accelerated down the runway and rotated into what appeared to be a normal climb attitude of about ten degrees nose up. After the gear was retracted at an estimated altitude of 150 feet, the airplane suddenly pitched up steeply to a 30 to 35-degree attitude. This pitch up was accompanied by the sound of a rapid, almost complete power reduction followed immediately by the sound of power being added to all engines. The deHavilland began fishtailing and then rolled to the right in a nose-low attitude. As it gained speed, the aircraft rolled back to the left, pitched up a second time and just as quickly rolled again to the right and pitched down. The right wing hit the ground followed rapidly by the nose. The aircraft came to rest on its right side adjacent to the airport firehouse. A small post-crash engine fire was extinguished immediately. The first officer and seven of the passengers died as a result of the impact. The captain and the 12 remaining passengers suffered various degrees of serious injury including fractured limbs, lacerations and contusions.

Investigation

NTSB officials made a thorough examination of all available control system and control surface components but were unable to find any evidence of structural failure or malfunction. Fuel samples were taken from all four reciprocating engines but no contamination was found. The engines were then disassembled and their components examined in detail. No abnormalities were discovered and the engines were judged capable of producing takeoff power. In short, absolutely nothing was found in the aircraft systems that could have contributed to the accident.

Post crash examination of both pilots revealed no evidence of incapacitation prior to impact. Testimony from the surviving pilot helped piece together the eye-witness accounts. The captain said he did experience an abrupt pitch up soon after takeoff, and right after the landing gear and flaps were raised. He stated he retarded the throttles, then advanced them to check for any possible engine problems. This explains why witnesses heard the power reduction and the immediate reapplication of it. Describing the successive rolls to right and left he said the plane felt like a "leaf coming down from a tree." Full forward pressure on the yoke had no effect on the nose-high attitude and subsequent power-on stall. The pilots wrestled with the totally uncontrolable airplane until impact.

Significant Findings

Because there was no fire damage, the Board was able to find conclusive evidence that the aircraft actually exceeded its allowable gross weight by 1,060 pounds and was loaded in such a way that the aft center-of-gravity limits were exceeded. Furthermore, accurate load information had not been passed from the previous stopover airport and passenger and baggage weights were in error when compared with those annotated on the cargo manifests. According to the paper work, the aft cargo bin contained 289 pounds of baggage. But after the accident, the actual weight was found to be 1,015 pounds. This, along with the inaccurate passenger weights, was enough to cause severe control problems and the excessive nose-high attitude. Even raising the landing gear on this type airplane actually increases the aft C.G. slightly, so a safe recovery quickly became impossible at such a low altitude.

A Final Thought

This mishap graphically illustrates the importance of proper aircraft loading and documentation of weights by location on the aircraft. Unlike this commuter airline, some of whose loading personnel were untrained in weight and balance procedures and the importance of proper load distribution, we in MAC are fortunate to have highly trained people and an effective aerial port system, plus loadmasters or other knowledgable crewmembers to supervise the loading of passengers and cargo aboard our airplanes. Such massive discrepancies in aircraft loading are extremely rare, if not downright unheard of in MAC. But this favorable situation will continue only if everyone involved remains committed to safe loading. As long as humans are capable of error, everyone must do their part to insure that such a needless tragedy doesn't befall a MAC airlifter.

—Adapted from NTSB—AAR—80—3

Oxygen Enrichment Accidents

An exploding cheese sandwich has just got to be funny, but the degree of amusement depends entirely on whether it happens to you or to someone else.

Recently, a Royal Air Force navigator removed his oxygen mask in flight in order to eat a cheese sandwich. As he did so, the regulator released a puff of oxygen which ignited the sandwich.

There have been relatively few recorded oxygen enrichment or oxygen/grease accidents in recent years, but they obviously are an ever present hazard, and it is for this reason we should remind ourselves periodically of some of the dangers peculiar to oxygen. Surprisingly enough, this colorless, odorless, heavier-than-air gas is not combustible itself, but it is a very powerful *supporter* of combustion. Certain organic materials based on carbon may react with it at room temperatures, and if the material concerned is a good thermal insulator, the heat generated in the reaction cannot be readily dissipated. The temperature may continue to rise until the ignition point is reached and combustion starts. On occasion, the heat increase can be extremely rapid. Some greases, oils and fats (especially linseed oil, for example, which contains carbon-carbon double bands) are particularly prone to ignite. One of the common items we tend to take for granted, but which falls into this category, is the lip balm designed to relieve chapped lips. Facial burns and irritation have resulted from the interaction of 100 percent oxygen and lip salve on several occasions.

Oxygen enrichment is very easy to understand. At sea level, air contains about 21 percent of O_2, which is sufficient to support normal combustion. It naturally follows that where oxygen content is increased—accidently or otherwise—combustion can take place much more swiftly.

One of the most infamous oxygen enriched fires occurred on the Apollo launch pad in January 1967. Astronauts Grissom, White and Chaffee had spent several hours in their capsule doing routine checks when an electrical short circuit caused a flash fire in the pure oxygen environment. All three astronauts died almost instantaneously.

Another tragic oxygen enrichment fire broke out in September 1976, this time in a marine situation, aboard the *HMS Glasgow* which was in the hands of a private shipyard for fitting out. A leaking O_2 hose filled up an auxiliary machinery space in the ship with a concentration believed to be in excess of 40 percent. When they started working, four shipfitters lit cigarettes which promptly burned away almost at once. Failing to recognize this classic sign of oxygen enrichment, they lit another round of smokes. A few minutes later a welder started a fire which resulted in the deaths of eight men.

In civil aviation in recent years there have been a number of ground fires involving accidental O_2 enrichment. In several cases the result was severe damage or total loss of the aircraft. One accident in flight occurred on a BAC-III enroute at 25,000 feet from Klagenfurt to Berlin. Nearly 90 people were on board at the time, and the first indication of trouble came from wisps of smoke on the flight deck. Within two minutes the smoke became so dense that the captain had to sit on the forward edge of his seat to see the instruments. An emergency was declared and a let-down was started for Hanover. Using cabin fire extinguishers, a stewardess attacked the fire which was located in the vicinity of the HF radio antenna lead. The blaze was believed to be of electrical origin and quite early in its development it burned through the passengers' oxygen mask main supply tubing which gave an intensity to the fire sufficient to penetrate the fuselage structure shortly before landing. Fortunately there were no casualties, but had the accident taken place in a more remote location, a different result would likely have ensued.

Although the services have a good safety record concerning oxygen enrichment and oxygen/grease mishaps, we must not become complacent. We operate and maintain many different types of oxygen systems, and a large number of people are exposed to potential danger every day. Each of us involved in any way with oxygen should be meticulous about checks and operating procedures because there probably won't be any opportunity for us to learn from our mistakes.

—Adapted from *Air Clues*

FLYER FORUM

Copping Out

A few phrases that occasionally creep into mishap reporting are the terms "operational necessity," "operational requirement," and "tempo of operations." Related terms are "tactical combat environment" and "military exigency." Just for a moment, let us examine these phrases and how they apply to aircraft mishap reporting.

The first two terms, "operational necessity" and "operational requirement," have no application in mishap analysis and usually indicate some sort of breakdown in the decision making process. When stating operational necessity or requirement and not fully explaining the circumstances or conditions that lead up to the mishap-related decision, no insight can be gained into the psychological pressures and climate existent at the moment of the decision. The decision maker is implying that he was aware that a high-risk decision was made and approved of taking that risk. Shortcutting established procedures falls into this category. The following is an extract from a recent, accident-related message:

"The conduct of operations which ignores or circumvents sound maintenance and operational practices cannot be permitted. In this period of resource austerity, each squadron commander must ensure that his unit operates to its maximum effectiveness within constraints of the unit's available resources. There is no routine peacetime mission that takes precedence over prudent established maintenance and operational procedures."

The third term, "tempo of operations," is a recognized mishap cause factor but is ordinarily reserved for use in areas of actual hostility or possibly a life-and-death rescue situation. However, "tempo of operations" is sometimes used in the same context as "operational necessity" and "operational requirement." In other words, it is used to justify a bad peacetime, artificial-pressure decision. The last two terms "military exigency" and "tactical combat environment" are for use in actual contingency or hostile operations and not for the local commander's exception-making powers. Here is another extract from recent message traffic:

"There is no flight in peacetime so important that it can't be cancelled or terminated . . . . If there is a reasonable doubt that the flight cannot be conducted safely . . . get it on the ground."

When a decision has backfired and resulted in a mishap, it is important to recognize the decision for what it was, supervisory error, and to analyze the factors leading up to the decision just as if it were a material failure which caused the mishap. Not only the fact of failure, but the "why" of failure is necessary, if similar mishaps are to be avoided and lessons learned are to be applied to future operations.

—*USN Weekly Summary*

Changes in lateral separation between aircraft flying along the NAT Tracks have recently been introduced and additional adjustment in longitudinal spacing is just around the corner.

Watch Your Tracks

Starting 30 October 1980, the minimum lateral spacing between tracks in part of the North Atlantic (NAT) Region was reduced to 60 NM. A reduction in longitudinal separation is scheduled for November 1981. As frequent users of the NAT organized track system, MAC crews may question the safety of this change and wonder what additional demands will be made on crewmembers. To explain how the separation reduction was arrived at, we'll start with a bit of history.

ICAO's original track separation standards were based on rather arbitrary criteria. By the 1960s proposals were being made to reduce the separation, but ICAO members agreed that changes couldn't be made unless they were safe. This led to the question, "What is meant by safe?" Ideally we might like to have a guarantee that there is no risk whatever of aircraft conflicting in flight. Of course, no such assurance can be given, even in a completely radar controlled environment, because of the possibility of mechanical

malfunctions and human errors.

With this in mind, ICAO established a target level of safety (TLS). In the case of lateral separation, the NAT target level is not more than 0.2 fatal aircraft accidents for every 100,000,000 flying hours. Similar risk factors are used when figuring the safety of longitudinal and altitude separation.

Armed with a TLS, ICAO built a mathematical model to calculate the risk on the basis of known performance. The model accounted for various factors, including the potential of an aircraft wandering far off track. It wouldn't necessarily conflict with another plane, the model predicted, because the users are so widely spaced along the tracks. Also, things like the size and speed of the aircraft were fed into the model. Studies of lateral and longitudinal separation began in the mid-60's, and have continued since then, so that few research projects have been more carefully detailed and documented. For instance, in the case of lateral spacing, records have been kept on aircraft navigation errors, as observed on radar at the end of their transatlantic crossings, for over a decade.

When the highly dependable accuracy of inertial navigation began to affect the model, the idea of eventual separation reductions became practical. With computerized navigation systems on board, the pilots had continuous, reliable readouts of their latitude and longitude available. Consequently, the busiest part of the NAT Region was designated Minimum Navigation Performance Specification Airspace (MNPSA). In effect, the only aircraft in the MNPSA became those with double-INS systems, or comparable omega and doppler installations. Additionally, the crews had to be well trained and flying with operable and reliable equipment.

Lateral Separation

First we'll consider the current reduction in lateral spacing to 60 nautical miles. Three requirements were established for this reduction to be considered safe. The first, standard-deviation-from-track errors, was easily satisfied from the start of MNPSA. In fact, about 95 percent of the aircraft were well within 10 NM of their cleared track at the end of their crossing. The second criteria is related to the number of errors of 30 NM or more. Shortly after the minimum navigation standards were adopted, there were many errors of this magnitude, but the trend has been reversed and the latest figures are quite satisfactory. The third measure is errors in a band of 50 to 70 NM from track. Again, there has been a fluctuating, but overall decreasing trend in such errors. In March 1980, on the basis of errors recorded during six months (four errors in 31,048 observed crossings), and the declining overall rate, the Systems Planning Group recommended the October reduction to 60 NM spacing.

We must also mention that the computer model is fairly conservative. Many of the assumptions in the model are very cautious. For instance, the model assumes that no conflict will ever be prevented by a pilot seeing the other aircraft and avoiding it. It also presupposes that the risk of losing vertical separation is equal to the risk of losing lateral separation. Errors observed at the end of an oceanic crossing are assumed typical of performance occurring, but not observed, at every other point along the track,

including the track-entry point. This type of approach has made the decreased separation very safe.

Longitudinal Separation

The safety of reducing separation distance between aircraft on the same track was analyzed in a manner similar to lateral separation. Then the statistical base was modified by a very cautious estimate of the extent to which air traffic control would successfully intervene if the separation was being eroded. Using these factors the safety target was easily satisfied.

Again, extra protections exist which the mathematical model didn't take into account. First, the rate at which one aircraft will overtake another, flying at about the same indicated Mach number is likely to be very slow. As a result, the time for possible visual sighting would be quite long. Additionally, monitoring position reports might alert the pilots to a possible conflict and cause them to increase their visual scan or consult the air traffic controller about spacing. Of course, if any specific problem developed, i.e., radio problems resulting from sunspots, it would be possible for ATC to increase time spacing between track entries until the problem was resolved.

Crew Actions

In the environment of decreased lateral separation it's very important for crewmembers to check the computer flight plan against the assigned track. Extra care in loading waypoints into the INS or omega cannot be overemphasized. We must also be careful that the present good standard of navigation does not deteriorate, and that procedures outlined in FLIP for navigation and communication failures are carefully followed.

During 1979, some misunderstandings between pilots and controllers as to the route to be followed were detected too late for corrective action. Consequently, a new procedure was introduced into the NAT Region which required air reports to include actual position, an estimate for the next position, and the position beyond that. Careful compliance with this routine will help eliminate misunderstandings.

In the case of the upcoming reduced longitudinal separation, crews must adhere strictly to their assigned Mach number. They must also accurately report any malfunctions in the aircraft's Mach indicator, or automatic speed control systems, so they can be promptly repaired.

ICAO believes the planned reductions in separation in the NAT Region are safe. They are the result of careful and conservative analysis stretching over a decade. Additionally, the performance of NAT track users will continue to be monitored after the narrower separations are introduced, and major deviations will be identified. Even so, people who aren't aware of the great amount of detailed work which preceded these changes may be overly concerned that two reductions in minimum aircraft separation are being made in just over a year. Perhaps their concerns can be alleviated by this statistic: the dimensions of a typical subsonic jet transport are about 200 feet by 200 feet by 50 feet. If you assume that the aircraft fills a solid cube of that size (which it obviously doesn't), there is still room for 170,000,000 such "boxes" in the airspace block (60 NM by 80 NM by 2,000 feet) asssigned to each NAT-track aircraft after November 1981. This is not a specific argument in favor of the reductions, but it tends to put the problem in a slightly different perspective.

Material for this article was extracted from an International Air Transport Association report published in BOAC's Air Safety Review. *—Ed*

FLYERS ANONYMOUS

The following "confession" by an airline captain, which appeared in several airline safety publications, fits in so well with TMF's *"Flyers Anonymous" theme that we thought we would pass it along this month. Even though it involves a commercial cargo hauler, it could just as easily have happened to one of us on a "bad day." You might want to do a little empathetic role playing and ponder how you would have handled things had you been in the captain's shoes or perhaps the first officer's or the flight engineer's.—Ed*

This incident occurred during vectors for a localizer approach to Runway 5R with a side-step to 5L at Toronto. Weather included an 800 foot ceiling with 2½ miles visibility and light rainshowers. Wind was 360°, at 10 knots. Our heading was 240° and we were at 7,000 feet. We were given a turn to 330° descent to 4,000 feet. In the turn and through 6,000 feet the controller says, "You are three miles from the fix. Can you get down in time if I turn you on final now?"

I tell the first officer to answer "Yes." We are given a turn to 030° and descent to 2,800—intercept the glide slope and cleared for the approach. Call the tower at the fix. . . .

Sometime during this exercise, the second officer gets a new ATIS which he puts on the card for us. Viz is now 1½ miles in light snow and fog. To get down, I have gone to flaps 25 degrees and put the gear down in the turn and I am descending at a good rate. Too good, as a matter of fact, because out of 4,000 feet the GPWS goes off. Startled, we all look around; it's obviously an excessive descent rate. In that momentary confusion, however, I go through 2,800 and stop at 2,100. The controller calls and tells us we are low and to go back to 2,800. I'm already going. Just reach 2,800 and there goes the fix. I'm mentally kicking myself when it registers that the first officer is telling me that 1½ is illegal for 5L and he is correct. Still above MDA for 5L, and there are the approach lights for 5R. A very sloppy approach to say the least. I've been behind the power curve ever since I accepted that turn onto final. At least three times now things have occurred which called for a missed approach.

Why am I here?

The visual acquisition of a set of nice bright approach lights in limited visibility is one thing, but the acquisition of runway lights *only* in limited visibility is quite another. Our speed, as I recall, for flaps 35 degrees is about 150-155 knots. I stay at MDA until we see the runway. Visibility is not bad on the approach, but it's worse over the field. When we do see the runway, I order full flaps and adjust power to get down. It is almost too late. I touch down at least 2,000 feet from the threshold. I get it stopped all right, but this is no way to run an airline!

For days now I've been kicking myself and asking, "why?" I'm sure the first officer was shaking his head all the way down. A comedy of errors. I dug my own hole, that's for sure. We tend to be a bit more lax, I think, with a freighter than we would with passengers on board. We'll take a little more turbulence or make a steeper descent. The cargo pallets won't mind. We'll also, at times, accept a close-in turn from a little too high just to be cooperative. We can even cooperate ourselves right out of the ball park. I could have, and surely should have, said, no, and made a missed approach—but I didn't. Once I accepted that turn onto final I felt obligated. Pride? This was an illegal approach. The lower viz was received outside the final approach fix, and once the GPWS went off, I never did catch up. The only wise thing I did was stay at MDA until the runway was in sight. The rest I'd like to forget . . . but I can't.

Honorable Mention, 1980 MAC Flying Safety Writing Contest

I Always Leave My Problems at Work... I Have Enough at Home

by Capt Thomas P. Hooper
Det 5, 38 ARRS Tyndall AFB, Florida

Captain O.L. Timer, a highly experienced HH-3E instructor pilot, is reporting for duty at 0730 on a Monday morning.

What a weekend, didn't get a thing done . . . the blasted air conditioner at the house quit . . . probably cost a fortune to fix . . . can't get ahead . . . I wonder if the guys in civil engineering moonlight? Got to remember to call Bobby's teacher . . . another note home on Friday . . . I don't know what I'm going to do with that boy. Let's see what I'm doing today . . . ten o'clock takeoff, instrument training with Lieutenant Newby.

The phone rings at Timer's desk. It's his wife. "Honey, the air conditioner repairman is here; he says it will cost $127 to repair the compressor."

Damn, that's highway robbery . . . sure wish I could check with civil engineering . . . oh well, "Tell him to go ahead and fix it; those repairmen really know how to put you over a barrel!"

0815: After several bull sessions with other pilots also victimized by local rip-off artists, Captain Timer's anger has really peaked.

0830: The captain briefs his crew on the mission. Newby will fly all the approaches for instrument training, besides, as an instructor, Timer has done them scores of times before. The flight engineer groans, and braces himself for "yet another boring instrument ride."

"Mornin', Lieutenant Newby, how has your instrument training been going?"

"Well sir, I've been having a problem with . . ."

The words trail off into noise as Captain Timer listens, but does not hear. He stares right through the Lieutenant, lost in thought. *That rotten S.O.B. . . . there goes the money I had put aside for that fishing trip, now I have to shell it out for the damn air conditioner . . .*

"Don't worry lieutenant, whatever problems you've been having we'll take care of 'em." (Intercom rings)

"Captain Timer, you have a call on 76."

"Captain Timer, this is Zeke Williams, Principal at the base elementary school. I have your son, Bobby, in my office. He almost caused an accident on the school bus this morning."

Not again . . . why does he do those things? . . . I'm going to have to lean hard on that boy . . .

"It seems that Bobby opened the rear emergency door," the principal continued, "the driver was distracted by it and almost had a head-on collision."

Timer's temper starts a slow burn as he apologizes to Mr. Williams for his son's conduct.

"Sir, have you seen the weather?"

The lieutenant's question brings Captain Timer back to reality, and for the moment out of his mental rage. "No, I haven't, what does it look like?"

"Looks like the field will go IFR about halfway through our flight," responds the young pilot.

"No sweat! You're not afraid of a little weather are you? Besides, it will be good training for you."

0930: Phone call, once again it's Mrs. Timer, "The air conditioner quit again. It's getting too hot to stay in the house and it's only been an hour since the repairman left."

Captain Timer comes completely unglued. "I don't believe it! I'll call him when I land, dear. It's time to go out and preflight." *That guy had the nerve to charge me $127 . . . I ought to stop payment on the check . . . why can't anyone do dependable work? Maybe I shouldn't have bought an older home .*

1000: The Jolly Green Giant takes off as scheduled; three souls on board and *two* minds.

1115: "Approach, Jolly 99, 260° radial, 1,000 feet, squawking 1200. Request vectors for a PAR, low approach, followed by an ILS." Lieutenant Newby measures each phrase, trying not to make any errors. He does a fairly good job on the PAR allowing the IP's mind to wander even further away. *Have to remember to call that repairman and give him a piece of my mind . . .* "Good job lieutenant, now lets have a shot at the ILS."

As the Jolly whirls on, the predicted drop in the weather takes place. Captain Timer numbly observes how the copilot handles the real thing. The Lieutenant tightens his grip on the controls, as Jolly 99 is en-

veloped by the clouds. The approach continues and the crew is lulled by sizeable breaks in radio chatter and several unanticipated long vectors for spacing from other aircraft. Finally, Jolly 99 is given a turn to intercept and cleared for the approach. At this point, Captain Timer decides Newby has absorbed about enough training for one day and requests a full stop. He then settles back to rekindle his anger in preparation for his call to the repairman.

The left-seater is totally absorbed in flying the ILS crosshairs for a perfect run on final. The approach looks wired as the helicopter nears decision height. Jolly 99 breaks out of the overcast just above minimums. The young lieutenant presses on toward the runway feeling proud of himself.

Transitioning to VFR, the crew prepares for a touchdown on the runway. Captain Timer is primed and ready to give a verbal thrashing to the repairman. The flight engineer is just waking up from an IFR nap.

"The gear! The gear!," the engineer shouts over the interphone. Timer is astonished when he looks and sees the handle in the up position. Lieutenant Newby hasn't called for the gear.

Why didn't the gear warning system sound? . . . no time to answer that question.

A thousand other thoughts struggle in an attempt to become actions as the aircraft settles to the runway. The young copilot is frozen on the controls, so Captain Timer takes over. A deafening sound fills the cockpit as the keel scrapes the runway. The engines respond as a go-around is initiated. Seconds are passing like hours, and the crew seems to be responding in slow motion. The flight engineer lunges from his seat to activate the gear handle, but it's already too late. Captain Timer calls the tower as the helicopter reenters the overcast. The crew is silent, each man reflecting on a close call—a very close call.

The engineer checks the aircraft for damage on the inside, while Timer requests vectors back to the field for an emergency landing. The helicopter is landed from a hover, and the crew asks themselves over and over, "How did we miss the gear? Why didn't the warning horn go off?"

The second question is most easily answered. The landing gear warning system (light and audible signal) is designed to alert the pilots whenever the landing gear is not down at airspeeds below 60 knots. It had functioned normally during the Before Starting Engines checklist. Inspection of the aircraft revealed a loose electrical connection, causing the warning system to fail.

Captain Timer later admitted that he normally allowed students (especially a new pilot) to miss an item or even a checklist, then accomplish it himself while pointing out the error. This was the case with Lieutenant Newby. The instructor knew the lieutenant had forgotten to call, "Gear down, before-landing checklist," but was too distracted to accomplish it himself or bring it to Newby's attention. The lieutenant was not mentally flying far enough ahead of the aircraft to react effectively to the situation. He was totally wrapped up with the mechanics of piloting the helicopter, and quite proud of himself for shooting such a fine actual IMC approach. The flight engineer failed to back up the pilots and insure that essential details, such as lowering the gear, were accomplished.

The underside of the aircraft suffered a crushed doppler antenna, smashed anticollision light, and numerous crushed centerline ribs and panels. Ultimate responsibility rested with the aircraft commander, who was on board physically, but not mentally. Due to the captain's lack of mental presence, disaster struck.

How many times have you reported for a flight with your head full of problems from home, or other thoughts extraneous to the business at hand? How many times have you let problems distract you to the point of inattention to important details? How many times have you failed to exercise the mental discipline to avoid such conditions? There is no way to determine how many times similar circumstances ended in tragedy. Dead men tell no tales.

ABOUT THE AUTHOR

Captain Hooper graduated from St. Francis College, Loretto, Pennsylvania, in 1970 with a B.A. in Sociology. He entered the Air Force in 1972 and graduated from OTS in June of that year. After completing helicopter pilot training in 1973, he was assigned to the 5040th Helicopter Squadron at Elmendorf AFB, Alaska which later became the 71 ARRS under MAC. After a short time flying UH-1s and HH-3s for the 301 ARRS (AFRES) under the Palace Furlough program, Captain Hooper returned to active duty with Det 5, 38 ARRS, Tyndall, AFB, Florida.

Getting the Lead Out

Helpful hints for otiose aircrew members.

It's a tough day, and you're feeling just a little logy—nothing too bad, just a bit of the sluggishness and loss of vitality that comes from going without exercise for a while. You'd like to perk up, but the idea of another cup of coffee just turns you off. Well, have we got a deal for you!

Below are instructions and diagrams for some simple exercises that don't take much time and, best of all, can be done while sitting in your cockpit seat (unless you're super big, in which case you may have to use some discretion as to which ones you choose). The exercises are designed to improve circulation, stretch some muscles, flex joints and provide some positive stress for your body. If you conscientiously do these exercises, you may not be able to compete with Eric Heiden or Bruce Jenner, but you'll feel a lot better.

There is no particular order or grouping to these exercises; obviously, the greater the variety you do, the more overall benefit you will derive. On the other hand, if you're feeling that a particular problem is building up (say something like back tension or tight shoulders), you can just pick the exercises you want to handle that specific problem. It is important, however, that the exercises be done as described.

Lower Legs and Calves

1. Heels and Toes Lift:

Lean forward slightly with hands on knees. While strongly contracting calf muscles, lift heels as high as possible. Slowly lower heels and then lift toes as high as possible, keeping heels on the floor. Do 10 to 15 complete repetitions.

Leg Muscles

2. Leg Isometrics:

Cross ankles, with both feet on the floor. Strongly press forward leg backwards against rear leg and vice-versa, but allow no movement. Hold at maximum force for a count of five, then relax. Do three repetitions, then reverse foot position and do three more.

Torso

3. Waistline and Lower Back Flex:

Hold elbows at shoulder level and slowly twist as far as possible to the right. Slowly return to face forward and continue as far left as possible. Keep going at a medium pace, without holding your breath. Do about 10 to 12 repetitions.

4. Lower and Upper Back Flex:

Sit straight up, feet flat on the floor. As you exhale, bend forward and touch your feet. Immediately sit up, as you inhale, and pull your arms back at shoulder level, as if you were "rowing" your seat. Hold this position, with your back arched, for just a moment, then repeat the entire motion. Do 15 repetitions at a moderate pace.

5. Side Stretch:

Sitting up straight, with hands down alongside your seat and abdomen drawn in, slowly lean to one side (no forward motion allowed) and try to touch the floor. The motion is very similar to retrieving something from the bottom of your nav kit, except you should be looking forward. Straighten up, then move to the opposite side. Do about ten to each side.

Abdomen

6. Abdominal Muscle Trim:

Sit straight up with your hands on your knees. Exhale as you draw in your abdominal muscles as far as possible; relax, letting out muscles as you inhale. Repeat 15 times at a steady, brisk rate.

Chest and Upper Arms

7. Palm Squeeze:

Put your hands in your lap, palms facing each other. Without holding your breath, push your hands strongly against each other for a medium count of four. Relax. Repeat 10 to 15 times.

Head-Neck

8. Head Rotations:

Sit up, hands in lap, relaxed, with your head drooping and chin on your chest. In a slow, relaxed motion, moving only your head, rotate your head around in a large easy circle to the right. After completing one circle, rotate to the left, and so forth, for about six repetitions.

9. Shoulder Lift

Sit erect with hands on upper legs. Inhale, while straightening arms and shrugging shoulders as high as possible. Hold for a moderate count of four, then exhale in a long sigh, letting shoulders droop, head sag with arms bent and relaxed. Stay relaxed for count of four and repeat. Do five repetitions, each time trying to feel the release of tension.

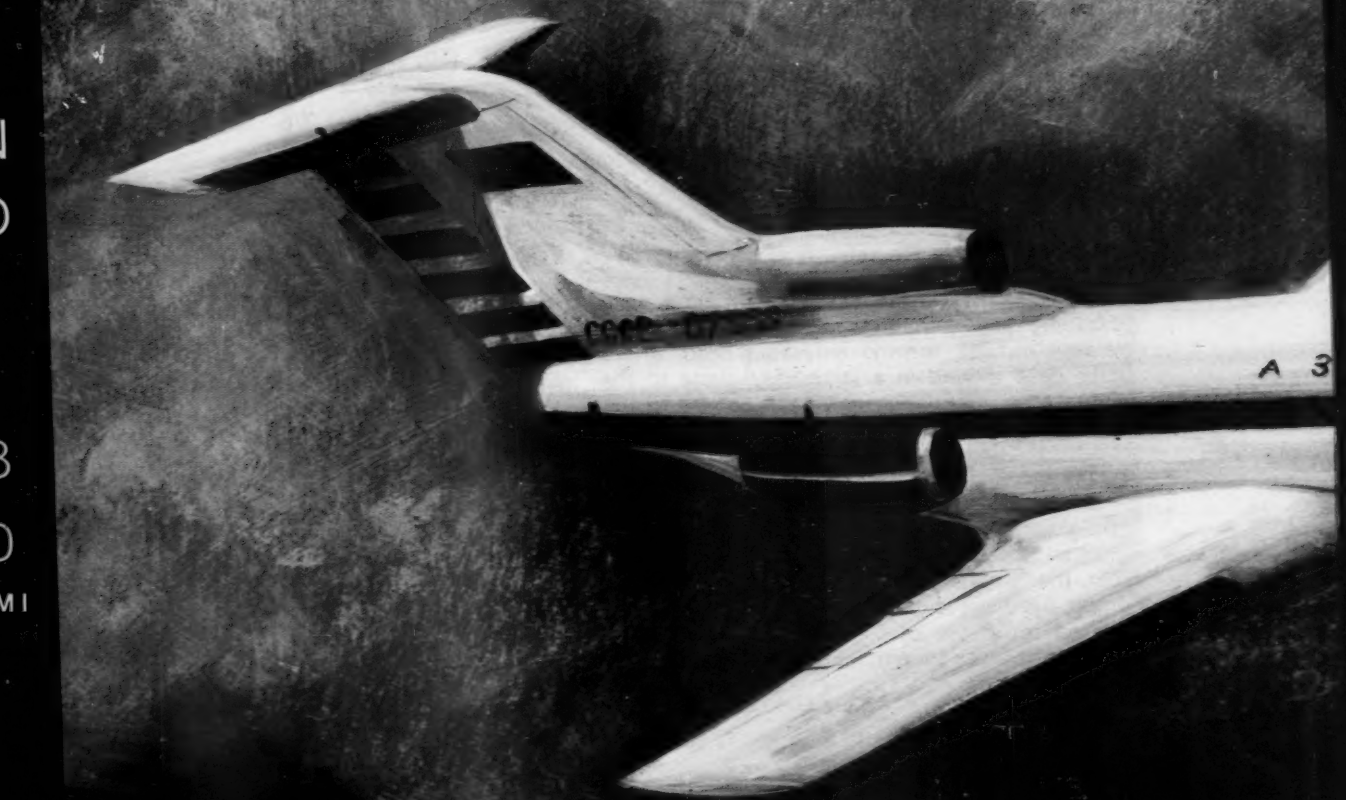
—Adapted from TWA's *Flight Facts*

THE CO

Yak-40 "Codling"

Even though the Yakovlev designed Yak-40 is relatively small, with a fuselage measuring under 56 feet and a max takeoff weight of about 35,000 pounds, it is powered by three Ivchenko AI-25 turbofan engines mounted on the aft fuselage and tail. Its primary mission is short-haul passenger runs on Aeroflot routes, plus official support airlift similar to that performed by MAC's CT-39 fleet. Some also serve as air ambulances shuttling patients between various medical centers and to convalescent areas on the Black Sea.

The first of five prototypes of the Yak-40, NATO code name "Codling," flew in October 1966 with the initial in-service passenger mission taking place in September 1968. Since then, hundreds

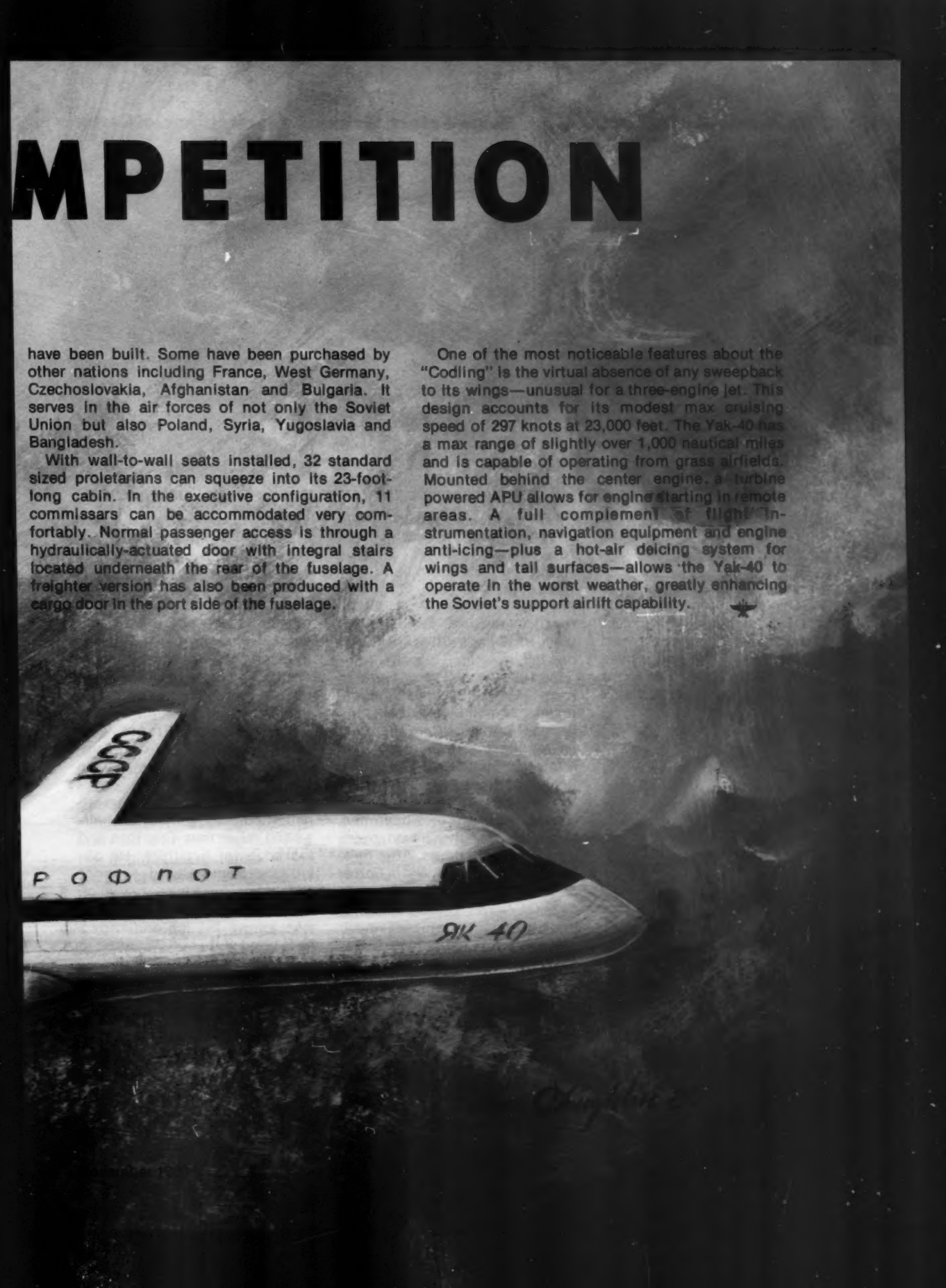


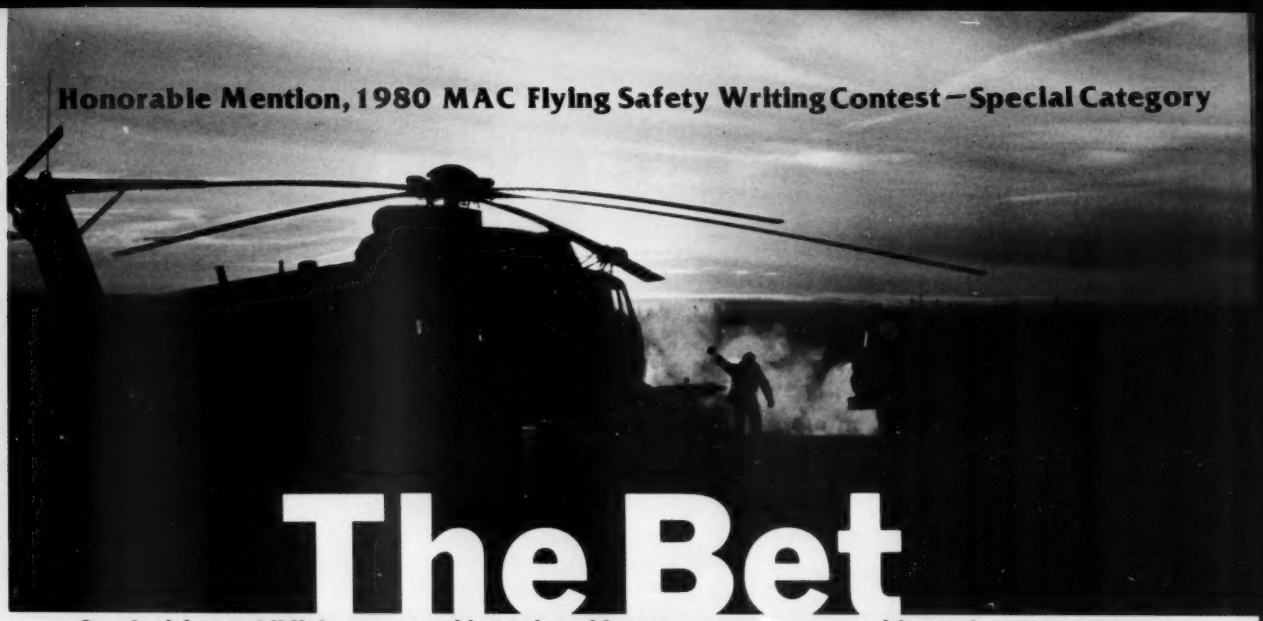
MPETITION

have been built. Some have been purchased by other nations including France, West Germany, Czechoslovakia, Afghanistan and Bulgaria. It serves in the air forces of not only the Soviet Union but also Poland, Syria, Yugoslavia and Bangladesh.

With wall-to-wall seats installed, 32 standard sized proletarians can squeeze into its 23-foot-long cabin. In the executive configuration, 11 commissars can be accommodated very comfortably. Normal passenger access is through a hydraulically-actuated door with integral stairs located underneath the rear of the fuselage. A freighter version has also been produced with a cargo door in the port side of the fuselage.

One of the most noticeable features about the "Codling" is the virtual absence of any sweepback to its wings—unusual for a three-engine jet. This design accounts for its modest max cruising speed of 297 knots at 23,000 feet. The Yak-40 has a max range of slightly over 1,000 nautical miles and is capable of operating from grass airfields. Mounted behind the center engine, a turbine powered APU allows for engine starting in remote areas. A full complement of flight instrumentation, navigation equipment and engine anti-icing—plus a hot-air deicing system for wings and tail surfaces—allows the Yak-40 to operate in the worst weather, greatly enhancing the Soviet's support airlift capability.





Honorable Mention, 1980 MAC Flying Safety Writing Contest—Special Category

The Bet

Sparked by a childish wager, pride and stubborness run rampant with tragic consequences.

by Randy Padfield
Madla, Norway

Lieutenant Colonel John P. Cranston stood behind a large wooden podium. Except for the theater-size movie screen behind him, the stage was empty. A single spotlight bathed the commander in a hazy white light and glinted off the command pilot wings on his chest. It made his greying hair look thinner than it was and highlighted the lines on his face. He looked tired; he was tired, very tired.

In its emptiness the auditorium seemed larger than it was. Only the first three rows in the center section were full. Most of those sitting there were men. All wore olive-drab-colored flight suits. Two women, one an officer and one an NCO, stood out conspicuously in their blues. No one said a word. Even coughs were muffled.

The colonel spoke, "Gentlemen, and er, ladies, we are going to do commander's call a bit differently today. I'm sure you can all understand why. I've decided to pigeon-hole everything that can wait until next month." There was a slight rustling and a few people glanced at each other. Still, no one talked.

"As some of you already know, the safety investigation board has completed their preliminary investigation. They will be leaving this evening on the rotator to Seattle. Although the final report won't be complete for a few months, Colonel James, the board president, has consented to give us an overview of their findings. After he's finished we'll run the *Air Force Now* film. But before I ask Colonel James to the podium, I think it is appropriate that we all observe a few moments of, ah, silent prayer for Captain Bass and Lieutenant Dickey."

Cranston stepped back from the podium, paused a second, and rather self-consciously bowed his head and folded his hands in front of his waist. Nearly everyone in the audience took the cue and bowed their heads. A few, like myself, sat erect. I wondered what everyone else was thinking during this moment of silence. I wondered what I was supposed to be thinking. I found myself wondering about the accident board's findings. I wondered if they found out about the bet.

The strained silence was finally broken when our commander looked up, cleared his throat and immediately turned the podium over to the investigating colonel. James was half-a-head taller than Cranston and looked a lot healthier. He obviously commanded respect and, when he spoke, his voice held the quiet assurance of one who knows his job and knows he is good at it.

"Thank you Colonel Cranston," James began. "This information that I will give you now is unclassified but, as with any military accident, there's no reason to go spreading the details all over town. So if anyone from the press asks you what happened, refer him to the base public affairs officer.

James went on to explain the known facts and events leading up to the accident. Most of what he said I, and I imagined many of the other people in the auditorium, already knew. Bass and Dickey were returning their HH-3E helicopter, Jolly 56, to Elmendorf after the two-week long exercise at Eielson AFB outside of Fairbanks. They had elected to file IFR and fly the victor airways over the mountains. According to their weather briefing, they should have been able to maintain VMC all the way, flying on top of the dense snow showers that were blanketing the Alaska Range. Jolly 56's last report to air traffic control occurred shortly before entering the mountain range. Their last known radio contact was with Jolly 52, my aircraft, which was also returning from Eielson but via the low-level route through Windy Pass.

The rest of what the Colonel said was new to me. After combing the wreckage the safety board concluded that there had been nothing mechanically wrong to cause the accident. However, they were able to determine, in spite of the heavy covering of snow over the aircraft, that the helicopter had encountered an extraordinary amount of icing in flight, so much that it was not able to maintain altitude. The fact that the engines were found to be operating at maximum power at the time of the crash confirmed this conclusion.

James constructed a scenario. "We suspect that Jolly 56 began entering the clouds a short time after passing McKinley Park Airport. A later PIREP from an Alaska Air flight confirmed that the cloud tops in that area were at 11,000 feet, instead of the forecast 8,000 feet. The helicopter continued in the clouds, possibly climbing to a higher altitude in an attempt to maintain or regain VMC. They soon began to pick up ice, however, and for some reason lected to continue instead of turning around. The ice kept building up until it was no longer possible for the aircraft to maintain altitude, even at full power. It began to descend. On the way down it made at least one 180° turn, possibly in a belated attempt to get out of the icing conditions. But before breaking out of the clouds it hit the ground, just grazing the top of a 6,300-foot ridge."

James paused to let his words sink in. If the room had been quiet before, it was like a tomb now. "It's possible that one or both of the pilots saw the ridge just before they hit because we figure they impacted with a nose-high attitude and at a fairly low airspeed. A little slower and without so much ice, they might have been able to save themselves. As it was, the aircraft skidded across the crest of the slope, rolled inverted down the north side and finally settled in a shallow gully. Both pilots were killed when the helicopter turned over, but miraculously, the flight mechanic and the two PJs in the back were not fatally injured. As you know, one of the PJs, Sergeant Michaels, made his way down the mountain with a broken arm and was able to stop a car on the Danali Highway, thus initiating recovery. His actions probably saved the flight mechanic who needed extensive emergency medical treatment. I understand Sergeant Michaels is being put in for a Humanitarian Medal?" James looked at Cranston who gave an affirmative nod.

"That's the essence of our investigation and our report," concluded the senior officer. "One cause of the accident is fairly certain—aircraft icing. But that still doesn't answer *why* the accident happened. That we can't figure out. We just can't understand why they continued the flight in such heavy icing conditions."

The last statement froze in my ears. They didn't know why the accident had happened. They didn't know why Joe Bass flew on until his ice-laden aircraft fell out of the sky. They didn't know about our bet. They hadn't found out.

"We can't understand why they continued flight in such heavy icing conditions." I wanted to stand up and shout, "I know why they did it. It was because of a stupid little bet between me and Joe Bass!" But I couldn't do it. They wouldn't understand. It was fear that held me back. Fear of being recognized as a cause, perhaps *the* cause—no matter how indirect—of the accident. Fear of

being thought of as so childish and stupid as to make a bet that ended up in the death of two pilots. Fear of having the stigma attached to me for the rest of my life. And, yes, fear of reprimand, of disciplinary action when the accident board found out.

I felt alone in the auditorium. I felt the need to confide in someone, to ease the guilt. But there was no one I could talk to. Suddenly the whole room was engulfed in darkness. There was the whir of a projector and the screen up front burst into life. A glider was banking gracefully, high above a snow-capped mountain range, the sun reflecting off its windscreen. The sky was a brilliant blue and mottled with puffs of pure white cloud. I recognized the theme song from "Jonathan Livingston Seagull." But that is all I can remember from the *Air Force Now* film. My mind was elsewhere. I was back at Eielson AFB. I was thinking about the events that had happened barely three weeks before.

My copilot and I entered base operations to pick up a weather briefing and file our flight plan for the return trip to Elmendorf. We had been TDY for two weeks and were anxious to get home. Joe Bass and his copilot, Bob Dickey, were already talking with the weather briefer.

"Well, as far as I can tell," the briefer was saying, "the cloud tops should be around 8,000 feet over the Alaska Range. We had a PIREP from a Wien pilot this morning and that's what he reported. I can't see any reason for change. With Anchorage reporting a ceiling at 20,000 feet and good visibility below, and, as you can see, it is clear and a million here, I should think you could make it VMC on top all the way." Bass nodded pensively, obviously considering filing an IFR flight plan, yet wanting to stay out of the clouds.

It sounded possible to go high but I still didn't like the idea much, especially in winter. In our helicopter, we couldn't make it all the way up to the Minimum Enroute Altitude, although we could legally fly the victor airway by maintaining the Minimum Obstruction Clearance Altitude. This meant, however, that for part of the flight we would be out of both radio communication and navigation range. And by some curious application of Murphy's Law, the area where we could receive neither the Fairbanks VOR to the north or the Big Lake VOR to the south was right over Mt. McKinley National Park. Although Mt. McKinley, at 20,320 feet, was 60 miles to the west and therefore no danger, there were plenty of other peaks in the area, which if not as high, were just as hard. If one encountered clouds in that area, at our altitude, with no navaids—well, it was just too risky for me. Flying the route VMC was fine, but IMC, no way. I asked the weatherman about the low-level passes. He scanned the papers in front of him. "Well, Captain, it looks like Isabel Pass is closed. It's zero-zero with snow showers according to a report from a Cessna 180 about an hour ago. Windy Pass isn't a whole lot better, but at least it's reported to be open. Should be a 500 to 600 foot ceiling with visibility down to half a mile in snow showers. It is also reported to have light to moderate turbulence between Healy River and Summit. That was from a Cessna 180, too. Might have been the same guy."

"Okay, smart guy. If you're so sure about your low-level route, why not put a case on it?"

"Sounds like real field grade weather," my copilot joked.

"Yeah, well," I sighed, "it looks like we don't have a whole lot of choice. Windy Pass it is. If a Cessna 180 can make it through there, I guess we should be able to. We can always turn around and at least we know the way. You sure you can't give us anything better?"

The briefer shook his head, "Sorry, we don't make the weather; we only report it."

I asked my copilot to fill out a VFR flight plan while I made a quick-stop at the latrine. I guess I'm just a helicopter driver, I mused to myself. Even with an IFR rating I don't feel comfortable unless I have one eyeball on the ground.

Just as I was about to leave the latrine, Joe Bass stepped in. Joe and I were never really good friends. In fact, we didn't actually get along at all. I suppose it started in flight school when he and I were battling for the number one position in our class. Joe always did a little better in the aircraft; I was always a few points higher in academics. When it came time to pick assignments, I had edged ahead. I took my present position, an HH-3E to Alaska—the one assignment Joe had made known that he really wanted. Joe chose second and took a CH-3 to Thailand. When H-3 transition was finished at Hill AFB, we went our separate ways without so much as a goodbye.

A year later, Joe finished his tour in SEA and landed a slot in Alaska. In the combat environment he had quickly risen from copilot to aircraft commander and checked out as an instructor

pilot before reporting to our unit. I was newly upgraded to AC when he arrived. Squadron policy dictated that all pilots new to Alaska fly the left seat until they were familiar with the area so it wasn't too unusual when Joe was put on my first crew as my copilot. It didn't help our relationship any. In reality, Joe was more experienced, but, while airborne, technically he had to obey my commands, imperfect as they were. It must have been quite a blow to Joe's ego and he wasn't one to swallow his pride. Looking back on it, the two of us made one lousy crew. Our coordination in the cockpit was worthless; we hardly ever spoke to each other. When Joe got his own crew after six months we never spoke at all.

So it was not without some surprise when Joe began to talk to me. I had intended to brush past him without a word.

"So you guys are going to take the old VFR-through-Windy Pass route back to Elmendorf," said Joe. His meaning was clear. Joe had chided me before about doing things the "standard" way just because they had always been done that way before.

"Yeah," I answered noncommittally.

"You know, we'll probably pick up a tail wind up high and since we'll be out of the clouds all the way there's no chance of icing. I suspect we'll beat you to Elmendorf by at least a half hour." The taunt in his voice was obvious. "Why don't you guys go high too? We could make it a combat formation, just like Southeast Asia."

"No thanks, Joe. I'd rather stay low. Excuse me." I made for the door but Bass was blocking the way.

"Okay, smart guy. If you are so sure about your low-level route, why not put a case on it?"

"No thanks, I don't like to bet. Besides you already said you'd beat us by half an hour. Please move out of the way."

But Joe wasn't to be put off so easily. "All right, Mason, listen to this. I'll give you fifteen, no twenty minutes. What do ya think of that?"

I don't know what caused me to do it. Maybe it was the ingratiating look of superiority on Bass's face. Maybe it was the memory of our rivalry from flight school. Maybe it was just because I wanted to get out of the latrine and away from him. But I agreed to the bet. We didn't even shake on it.

Bass didn't reply. We never heard from him again and neither did anyone else.

Our two aircraft took off two minutes apart. Bass was handed over to a radar frequency as he climbed to altitude. We stayed with tower a bit longer. It wasn't until we were just entering Windy Pass when we heard Joe's voice on the radio again. "Jolly 52 this is Jolly 56 on company radio. Can you read me?"

"Jolly 56 this is 52. Read you loud and clear, go ahead," my copilot answered.

"Yeah 52 we're making 125 knots up here. Howya doing down there in the gravel, Mason?"

I nodded to my copilot that I would reply. "Well, Joe, it looks like we're getting 140 knots from our doppler." My left-seater looked at me quizzically, then grinned in comprehension—our doppler hadn't worked for two weeks. For the last twenty minutes we had been creeping along at 80 knots trying to keep the ground in sight in blowing snow. We'll save a couple of chairs for you guys at the O'Club," I added. Bass didn't reply. We never heard from him again and neither did anyone else.

The sudden brightness of the auditorium lights being turned on brought me back to the present. The *Air Force Now* film was over. Cranston stood up, and without taking the stage, dismissed the squadron with the admonition that we have a safe weekend. He tarried in the front of the stage awhile, talking with Colonel James.

I stood up and began to put on my parka. It's now or never, I thought. The safety board will be leaving tonight. They'll be leaving after a very thorough investigation about the accident, but with one big question still hanging in the air: "Why did Captain Joseph Bass, an experienced combat pilot, continue flight in icing conditions until his helicopter fell out of the sky and crashed? Why?"

I had the answer. I knew why. And I knew it was my duty to tell them. To clear up the mystery. To explain about our bet. To do my part for flight safety. And to do so without concern for what consequence might befall me. It was my duty as a pilot and an officer. All I had to do was go down to the front of the theater and tell them.

I'll never forget that moment. The sounds of the people leaving the theater, the sight of Cranston and James talking together, the tight feeling in the pit of my stomach; every sensation seems etched in my memory. I paused for a second then proceeded down the aisle. The cold Alaska air stung my face as I walked on out of the auditorium.

Fire Fighting Flight Mech

Last fall Master Sergeant John B. Patterson, 71 ARRS, heroically fought a fire aboard his HH-3E Jolly Green in the air and on the ground. During a water-hoist training mission, the crew noticed an unusual rumble and vibration in the aircraft, so they immediately diverted to the nearest airfield. By the time they were on final approach, smoke and flames were entering the cabin from the rear of the main-rotor gear box. Sergeant Patterson immediately began fighting the fire with a small aircraft fire extinguisher. After the helicopter landed and the engines were shut down, he climbed atop the burning Jolly Green and continued to fight the fire from the maintenance platform. A fire truck soon arrived, but due to a foam-system malfunction it proved useless. From his precarious position, Sergeant Patterson fought the flames till they were extinguished. The rest of the aircrew escaped unharmed and the damage to the HH-3 was minimal thanks to the flight mechanic's persistent efforts. Master Sergeant Patterson was presented the MAC Distinguished Individual Safety Award by ARRS, and selected for an Air Force Well Done Award by the Air Force Inspection and Safety Center.

Super Suggester

Mr. Donald L. Younkers, 438 FMS, McGuire AFB, won the MAC and USAF Suggester of the Year Awards. General Huyser presented plaques recognizing Mr. Younker's achievements and value as an Air Force civilian employee. Mr. Younker's suggestions have saved the government nearly $3,700,000. His latest million-dollar idea was for locally manufacturing fiberglass components to replace worn out C-141 parts. The new components are lower priced, better constructed and more durable. Similar replacements have also been developed for the C-9 and C-130, and include comfort pallets, cargo compartment panels, navigator and flight engineer station tables, portable latrines, cockpit floor panels, survival equipment boxes, and galleys.

ARRS Flyers Win National Acclaim

Three members of the Aerospace Rescue and Recovery Service have won significant awards for aeronautical achievement. Major James E. McArdle, Jr, was chosen for the MacKay Trophy which recognizes the most meritorious flight of the year. Captain Kenneth R. Rees, Jr and TSgt John L. Pighini will receive the Cheney Award which recognizes an act of valor, extreme fortitude or self-sacrifice in a humanitarian effort.

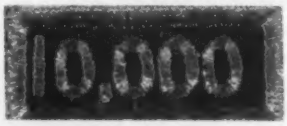
Major McArdle and his H-3 crew were launched from Osan AB, Korea, to assist the Taiwanese freighter, *Ta Lai*, which had run aground and was being hammered by 12 to 15-foot waves. Avoiding tall masts, booms and antennas aboard the cargo ship, the crew positioned their helicopter over the vessel and lowered a PJ to a small deck near the wheelhouse. This maneuver started a night rescue marathon in which Major McArdle and crew made three round trips to the ship and rescued 28 people. After being on duty for more than 15 hours, the crew completed the mission at sunrise.

Capt Rees and his crew arrived at the burning Hotel Corona de Aragon, Zaragoza, Spain, their first job was to retrieve a survivor and PJ left by another helicopter from the roof of the building. During this recovery, a man was spotted draped over a window sill on the eighth floor of the ten-story hotel. With the Jolly Green hovering half over the building and half over the street, Sergeant Pighini was lowered on a forest penetrator to the victim. He secured the man to the hoist and just as he was about to give the "up" signal to the flight mech, a violent updraft caused the helicopter to lurch, swinging the loaded penetrator against the building. Capt Rees set the slightly injured PJ and his charge down on the roof of a building across the street. There the pararescueman administered mouth-to-mouth resuscitation and external cardiac massage to the survivor. After getting a list of firefighting equipment needed, the crew returned to the base for refueling and a hoist change. Twelve minutes later, Capt Rees and crew were back on station at the scene of the disaster. Notified of three more survivors trapped on the hotel's tenth floor, pararescuemen were lowered to the roof. Using mountain climbing gear they prepared to rappel over the side of the burning structure. Just before they started, Spanish firemen came into the room and evacuated the people. Capt Rees again maneuvered the H-3 among antennas and nearby tall buildings to pick up the PJs from the roof.

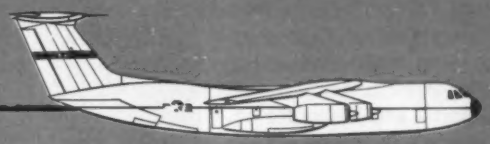
10,000-Hour Award Winners

Each year a small percentage of MAC's aircrew force completes 10,000 hours of accident-free flying. Their dedication and professionalism are personally recognized by CINCMAC through the Individual Flying-Hour Milestone Award. Between 1 January and 30 June 1980, 27 MAC flyers received the award; here are their names (ranks and units are those at time of achievement):

Lt Col William C. Christian, 55 WRS
Lt Col Kerry Gomez, 76 MAS
Lt Col Frank M. Horvath, 732 MAS
Lt Col James L. Houch, 701 MAS
Lt Col Gary E. Lange, Det 1, 1400 MAS
Lt Col Thomas C. Leonard, 109 TAG
Lt Col Edward N. Sidwell, 1551 FTS
Lt Col Norman W. Smeenk, 22 MAS
Lt Col Ronald J. Walters, 326 MAS
Maj James H. Smith, 179 TAG
CMSgt John W. McCann, 109 TAS
CMSgt Ronald Robertson, 18 MAS
SMSgt Albert Carter, 21 TAS
SMSgt George M. Culp, 300 MAS
SMSgt Marion D. Fincher, 3 MAS
SMSgt Peter Kost, 313 MAS
SMSgt Richard A. Lamb, Jr, 345 TAS
SMSgt Herbert L. Lewis, 22 MAS
SMSgt Charles W. Short, 76 MAS
SMSgt Alexander I. Steed, 3 MAS
MSgt Fridrich Baumgardt, 772 TAS
MSgt Guthrie W. Freeman, 300 MAS
MSgt Herbert A. Gage, 730 MAS
MSgt William A. Harper, Jr, 732 MAS
MSgt Ross R. Peery, 153 TAG
MSgt Warren A. Thompson, 300 MAS
MSgt Lester J. Watson, 53 MAS



Flight Lines



Dangerous Cup

The picture on page 10 of the May 80 edition really upset me. My concern is the coffee cup on the center console of what appears to be a CT-39 Sabreliner. I feel a picture is worth a thousand words. Also, I've read safety briefs warning against this practice on other aircraft. In fact, several years ago a movie was made concerning an airline crew's misinterpretation of instrument readings caused by spilled beverages on the center console. In that movie the results were fatal. I feel a better picture could have been taken with safety in mind.

Robert Cowell, TSgt, USAF
Reserve Affairs Division
375 AAW, Scott AFB, IL

***You're absolutely right about the cup, Sarge! It shouldn't have been on the console of that or any other aircraft. In this case one photo was worth about 130 words—those in your letter—that we hope will remind our crewmembers about this hazard. You're the undisputed winner of the *TMF* eagle-eye of the month award.**

The Navy Approach

As the fixed-wing writer for *Approach,* I thoroughly enjoy *The MAC Flyer.* July's issue is particularly noteworthy in that it contains a very fine article written by Capt Jerry M. Brewton, "Model 14J—The Ultimate Safety System." Seldom can one write a safety article with appropriate levity and still contain a viable safety message. Captain Brewton has done both! My personal congratulations to the *Flyer* and the author of this fine article about flight safety. It also occurs to me that his article may not be too "sci-fi" in the long run—with reduced resources available to us, they'll probably try to clone us all one of these days.

E. A. Homer, Jr.
Fixed-Wing Writer, *Approach*
Naval Safety Center
NAS Norfolk, VA

***Thanks for the kind words and we'll pass along your compliment to Capt Brewton. Your aside about science fiction may be correct. One of our wags in ground safety recently told us he'd figured a way to solve all of flight safety's problems: find one safe pilot and clone him.**

DEJAVU

Frankfurt - Main, Germany
(elevation 368 feet)

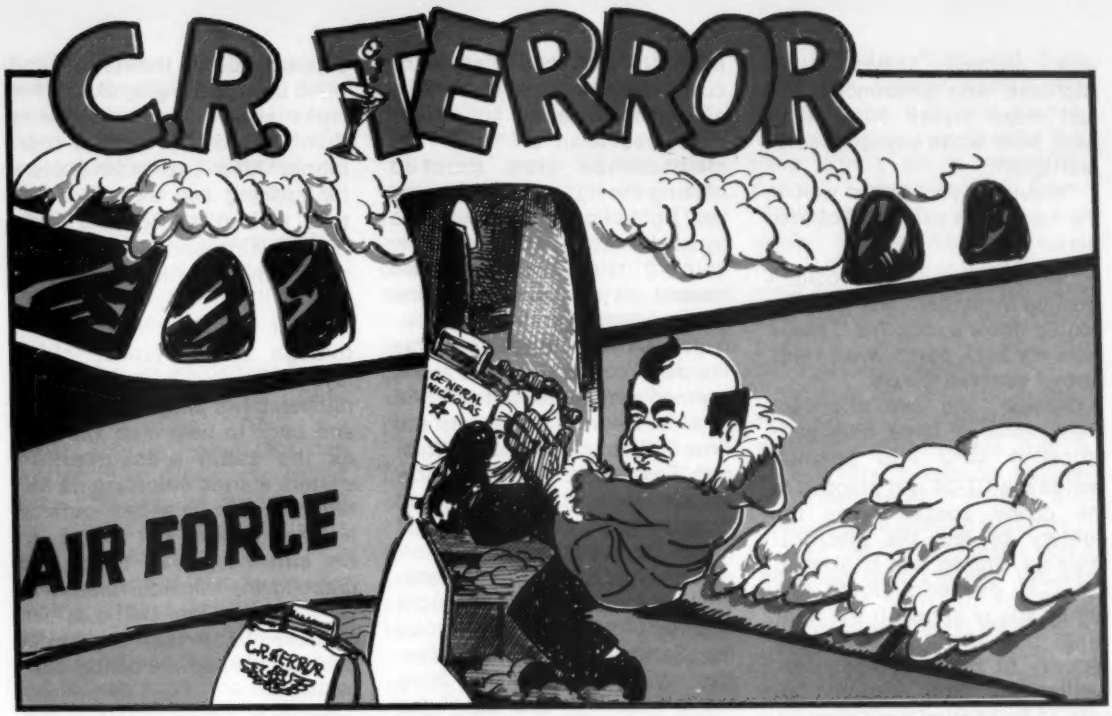
Mention the subject of flying into Rhein-Main to anybody who has done it before and they will probably pass a comment on the need for a buffer-zone briefing. While that is an important consideration, it is by no means the only factor to consider. Good to remember also is the fact that your prime alternate air bases, Ramstein and Hahn, have restrictions too, and current flight pubs should be carefully checked before you plan to use one of them. Rhein-Main itself is located in a densely populated river valley surrounded by rolling hills and an assortment of obstacles to unencumbered flight, including the traffic from a number of small airports and heliports in close proximity to the runways. Noise monitors are strategically placed to go off if you raise too much of a ruckus on arrival or departure. Speed control procedures also may be in effect for all approaches. So be sure you know them for your aircraft before starting an approach. A combined military and civilian facility, Frankfurt has two parallel runways, but the one you'll probably be most concerned with is 07R/25L, which is closest to the military ramp. Featuring high and low intensity runway and approach lights, VASI, threshold strobes and centerline illumination, 07R is a 12,303-foot long, 148-foot wide, nonprecision strip. Runway 25L has all the same lighting arrangements and ILS. Go arounds usually present little hazard, but the same can't be said for Frankfurt's crowded ramps and narrow taxiways. Foul weather conditions, especially fog, low ceilings and rapidly moving fronts frequently combine with the heavy traffic and terrain to keep things extra sporty. The key to safe flying around Frankfurt? Undivided *achtung* to business at all times!

—adapted from ISD-Q6-416

Runway 25L at three miles. Military ramp is to the left. Note the autobahn crossing approach path.

Three miles out from O7R, civilian ramp is to the left, military ramp is to the right at far end of field.

In this lateral view, you are looking northwest across the runways to the to the commerical airport on opposite side.



The Myopic Major demonstrates how *not* to practice the "see and aviod" concept.

Our snow accumulation shouldn't exceed three inches today," estimated the feminine Flight Service Station person with a crisp New England accent.

"How lovely, m'dear," purred Major Terror, oblivious to the content of her remarks. As his little pig eyes scanned her pulchritudinous profile, the FAA distaff continued checking other weather forecasts in the Boston FSS office. Standing patiently behind his heavy-weight honcho, Long Suffering Sam grimaced at the dreary weather conditions.

"However, things look better as you go south. Layered clouds reported over New York and New Jersey—this cold front is just approaching there—and Washington National is reporting 5,000 scattered, 10,000 broken and three miles with occasional drizzle," concluded the beautiful briefer.

Tuning in on the better weather in the D.C. area, C.R. cast the FSS lady a sly grin. "Weather's just above my personal minimums; thanks for the help, luv." Swinging his paunch toward the door with a flourish he ordered, "Let's get going, Sammy. Find that taxi driver and tell our DV that we're on our way to the airplane. I've got one more stop to make," his voice echoed as he trundled down the hall toward the coin-op snack center.

Out in the commercial crew van a bearded flight line attendant in the driver's seat hunkered down into his Navy pea jacket. In the back, Captain Sam chatted personably with a parka-clad one-star as they awaited the arrival of the Aviator with Avoirdupois. With flight jacket pockets bulging like the cheeks of a well fed chipmunk, C.R. soon appeared and clambered aboard the van.

"Looks like you stocked up for a long, hard winter," chuckled the good natured DV. "You must be the world renowned Major C.R. Terror," he continued with a broad smile, extending a gloved hand. "I'm General Christopher Nicholas."

Somewhat shocked by the VIP's congeniality, C.R. shook hands and stuttered, "Er, ah, Major Terror, at your service, sir."

Working at high speed, the truck's wipers could barely keep the windshield cleared as the crew approached a forlorn looking snow-covered Sabreliner. When the trio disembarked, C.R. opened the aircraft entrance door and Sam muscled the general's bag aboard. He

was closely followed by Nicholas who announced, "I'll just make myself comfortable back here while you gentlemen preflight."

"Wouldn't you rather wait in the nice warm van, sir?" offered Sam.

"Naw, this isn't very cold. I grew up in northern Maine. Why, I could throw a rock into Canada from my back porch when I was a boy," boasted the DV.

Outside, the line attendant maneuvered a large blue self-propelled GPU into position beside the CT-39 and plugged in the power cords. Inside the military biz-jet, the electrical systems clicked and blinked to life. C.R. pushed a gloved paw full of soggy snow off the right wing, bent down to check the security of the single-point refueling cap, and muttered an oath as he spotted a red stain on the snow near the right-main gear. Turning to the civilian mechanic who had followed him around the aircraft, the Pompous Pilot proclaimed, "Gonna need some warm air here, m'good man. Your tool kit too, I suspect." Shaking his head dolefully at the snow still piling up on the wings he added, "And, I suppose we might as well call out a deicing truck."

"Can do, Major," replied the mechanic as he headed for the truck to radio for assistance.

The Rotund One waddled through the rest of the walk-around and entered the cabin. In an apologetic tone he explained, "We've got to wait for some heaters and a deice truck, general. Shouldn't be too long."

"No problem, Major. I wouldn't try to fly a plane with this much snow on it either," confirmed the VIP. "I could do with a cup of that coffee though." The Portly Pilot promptly produced a steaming cup of java from the aircraft jug and passed it back.

In less than an hour, the maintenance crew finished heating the right wheel well area and tightening a slightly loose hydraulic fitting. Meanwhile the deicing truck operator had cleared all the snow from the wings, fuselage and empennage. Another heater hose was flopped into the doorway, and it warmed the interior of the CT-39 to shirt-sleeve comfort. By the time C.R. snubbed out his gold-ring Egyptian Oval in the snow at the edge of the ramp and boarded the aircraft, Sam had already copied the ATIS information and their ATC clearance. Just as C.R. fastened the right seat belt around his generous lap, Sammy finished the before-starting checks. Working from the left seat for this leg of the trip, the competent captain called, "Danger areas clear." C.R. nodded an affirmative and Sam pushed the button to bring the right turbojet to life. The Addled Aviator mumbled his way through the before-taxi checks as the left-seater set the switches and called Boston Tower for instructions. In seconds Sam eased the Sabreliner out of its parking spot on the snow-covered ramp.

Before long the CT-39 was waiting in line behind several airliners for departure on runway 04 left. During the delay in the action, General Nicholas moved forward, peered out the windscreen at the falling snow, and offered to get coffee for the crew. Both respectfully declined, so the VIP tapped himself a cup and retired to the rear. After a 20-minute wait, Rotun Zero-One was cleared for takeoff.

With Sammy at the controls the Sabreliner accelerated smoothly down the runway and lifted off into the gray sky. In the right seat, the Field Grade Fumbler tried his hand at copiloting. After two radar vectors for spacing and three low-altitude level offs, Rotun 01 was turned south and cleared direct to Providence with a climb to FL 230.

Their ascent took them through several broken cloud layers. Passing 7,500 feet, C.R. ratcheted his pudgy jowel down and back to help clear his ears as the cabin pressurization system started enforcing its differential. He glanced outside and saw nothing but clouds, so he slid his seat back and grabbed the mission folder and 781. "Rotun One, traffic at two o'clock, 10 miles, northwest bound," warned the center controller.

Mashing the mike button the Ambient Aeronaut replied, "Okay center, roger traffic, but we're in the clouds."

Despite brief moments of VMC, the weather forced Sammy to concentrate on the instruments for aircraft control. As the CT-39 passed 8,500 feet, the controller called again, "Rotun One, traffic now one o'clock, two miles, altitude unknown."

Slightly annoyed at having his paperwork interrupted, C.R. replied, "Roger the traffic." Then to Sam, "Must be a little bugsmasher down low." Just as he finished, the Sabreliner burst into bright clear sky at about 9,000 feet. Moments later Sam glanced out the windscreen. His eyes suddenly widened and he screamed, "Yikes!" Reacting instinctively to the close-up view of a twin-engine Beachcraft, he threw the yoke to the right and pushed forward. The mini-liner passed within a few feet of the

civilian plane whose pilot spotted the Sabre at the last moment and also broke to his right. The 39's pilots and DV passenger were subjected to slight negative Gs during the break, followed by over two positive Gs as Sammy recovered the plane from the self-induced unusual attitude. During the pullout a rasping groan of pain filled the biz-jet's cabin.

With the CT-39 righted to its proper climb attitude, Sam keyed the mike, "Ah . . . center, this is Rotun One, we spotted that previously called traffic. He was at our position and altitude a couple of seconds ago. Score a near miss!"

While Sammy and the center controller were chatting about the time, altitude and location of the near tragedy, C.R. turned and looked back into the cabin to check on General Nicholas. The Surprised Skipper saw the one-star rapidly fanning his coffee-stained blue shirt back and forth over his tummy. It was obvious that the unfortunate VIP had been holding a cup of hot coffee at the time of the break. "You gonna be okay?" inquired C.R. sheepishly.

"I'll live," came the disgusted reply, "but what the heck are you turkeys doing up front? This wasn't supposed to be an air-combat-tactics mission!" With these words the general vacated his soaked seat, grabbed a fistfull of paper towels from the galley and wedged his broad shoulders into the narrow cockpit doorway.

With beads of sweat appearing profusely on his brow, C.R. attempted to explain the circumstances of the near midair to the doused DV without revealing his own head-down-and-locked position at the time of the incident. Somewhat soothed, the general's good nature slowly revived and he returned to the cabin after level off. However, he came back up front to provide an extra pair of eyes as the Terrorific Twosome started the letdown into Andrews.

Hours later, C.R. and Sam sank their shakey frames into the soft chairs in the aircrew lounge at base ops. "Looks like we're gonna get a free RON, Boss," commented Sam. "Filling out all those forms and talking to the FAA guys about the HATR overextended our crew duty day. I hope they don't take your comments about their parents and in-laws too seriously and violate us."

"Violate us! How could they? We were in radar contact, with an IFR clearance. It was *their* responsibility to keep us separated from other traffic," emphasized the Balding Bumbler.

"But the civilian wasn't doing anything wrong either. He was operating VFR on top, but talking to a different sector controller. We were VMC when the Beechcraft appeared. See and avoid was our responsibility, and you weren't exactly helping me see," scolded Sammy.

Indignant, the Ace of Alibis protested, "I was attending to other important cockpit duties."

"Sure, sure," replied Sam with a pained expression, "but it's a real shame about the general's belly."

"How's that?"

"As we were leaving the safety office, I overheard one of the guys talking with the flight surgeon on the phone. Our DV actually suffered first-degree burns on his abdomen from the hot coffee."

"That is a tragedy," sighed C.R., "He's one of the good ones. I was kinda hoping he would write a nice letter to our commander telling how we saved his life."

"Not likely Boss. I suspect that we two aren't the only ones who know why we came very close to buying the farm today."

QUICK STOPPERS

Which Way is Up

The weather was deteriorating but the Army chopper crew pressed on and soon found themselves inside a fog bank. Realizing there was high terrain in the area, the pilot started a climbing left turn. Finally, after a few minutes that must have seemed like hours to the crew, the aircraft broke out of the fog and the pilot could see what appeared to be a ridge straight ahead. He flared the helo and kept the skids level with the terrain. Imagine his surprise when the chopper hit the 50-degree slope of the mountainside in an estimated 50-degree nose-high attitude. It's easy to get disoriented in weather—that's why they put flight instruments in the cockpit and teach pilots how to fly by them.

—Adapted from U.S. Army *Flightfax*

Hypoxic High Jinks

Just after takeoff the Galaxy's crew felt and heard an unusually loud vibration. Discovering that the ducting to the right water separator was damaged, rendering the right air conditioning pack inoperative, the crew began repairing it. Meanwhile, they continued the climb to FL 310 using the left airconditioning system and the floor heat for pressurization. It was not sufficient in this case, however, to keep the airplane fully pressurized, so the cabin altitude slowly rose to 13,500 feet. All primary crewmembers went on oxygen at 10,000 feet and the continuous flow system automatically activated. Many of the masks had to be deployed manually, and because the crew felt only a "trickle" of oxygen from the masks they surmised the system was not working properly. The three crewmembers struggling to repair the ducting experienced mild hypoxia symptoms which subsided when 100 percent oxygen was administered. The aircraft commander finally decided to return to base where he made an uneventful landing, after which the crew went directly to the flight surgeon.

It was later determined that the "trickle" of oxygen was just about right for a cabin altitude of 13,500 feet. But even if the continuous flow system was faulty, the crew still had access to fully charged walkaround oxygen bottles stored in plain sight all over the airplane. Their use by crew members would have prevented hypoxia.

Pudgy Pallets

While supervising the loading of a Navy C-9 an eagle-eyed loadmaster became suspicious of the weights marked on two of the pallets. He requested a reweight, and they were returned shortly with the same weights as before.

After refueling, the C-9 continued to its destination. On final approach, the pilot noticed that even though he had full nose up trim applied, still more was required. After selecting 25 degrees of flaps, the trim moved off the stops, allowing the pilot to make a cautious but successful landing. Reweighing the two pallets again, aerial porters found they were 1,400 pounds heavier than annotated at the onload base. This caused the airplane to exceed not only the maximum recommended takeoff weight for those conditions, but also placed the C-9 out of center-of-gravity limits. The source of the trouble was the cargo weighing scale at the onload base which had been jury-rigged to compensate for broken counterweights. This crew was fortunate to be able to maintain adequate control while airborne. Other flights with similar problems have not always been so lucky. (See this issue's "Mishap with a Moral," page 12.)

—Adapted from USN *Weekly Summary*

Notable Quote

Experience is not what happens to a man; it is what a man does with what happens to him.

—Aldous Huxley

Flight Fracture

Deviating well south of course to avoid severe thunderstorms, the C-141 crew was cleared to descend from FL 350 to FL 240 in preparation for an approach at their destination. At FL 240 the aircraft was between two thunderstorm cells, and even though one was 30 NM left and the other 25 NM right of course, they still encountered light clear air turbulence. A passenger returning from the latrine at the time fell in the aisle as she approached her seat and broke her right foot. Even light turbulence can be a serious hazard to unrestrained passengers and crew.

Landing Gear Grief

Shooting an overhead recovery, the C-130 was in lead position for the visual approach maneuver. The pilot overshot final and corrected back toward runway centerline. The meeting of airplane and macadam jarred the teeth of the crew sufficiently for some to complain of an "excessively firm" landing. After a taxi-back the pilot decided to take off again, but the loadmaster reported a louder than normal gear retraction. Following the visual check of another landing gear sequence, the flight engineer reported definite rubbing and scraping noises. The gear was lowered and a full stop landing made. Post flight inspection revealed cracks in both main landing gear shelf bracket assemblies. If it *feels* like a hard landing, it probably is, and you'd best write it up in the Form 781.

Shivering Sabreliner

While making a descent and approach to a European air base, a CT-39 accumulated ice on the wings and left engine. The pilot increased approach, threshold and touchdown speeds to compensate for the reduced lift available—but not quite enough. During the flare, about ten feet above the runway, the right wing stalled, dipped abruptly and contacted the ground, damaging the wingtip. It's fortunate the stall occurred only a few feet above the runway. Even the most skilled aviator is still subject to the laws of aerodynamics and violations can exact a heavy price.

After deadlines

WANT TO BE AN EDITOR for the world's finest fly safe magazine? *The MAC Flyer* is looking for a captain or newly-minted major with tactical airlift experience to join the staff. A background in journalism, communication, or public affairs would help, of course, but is in no way mandatory. A desire to write is, however, essential. Preferred PCS time frame is between March and August 1981. Interested crewmembers may write to: The Editor, *The MAC Flyer*, HQ MAC/IGFE, Scott AFB, IL 62225; or call autovon 638-3534.

LOOSE AND LEAKY CARGO has been plaguing MAC airlifters recently. One incident involved a 2½-ton truck which rolled aft during a C-141 takeoff, injuring two passengers and damaging a trailer. The aft restraints were improperly installed and allowed the tiedown devices to slip out of their receptacles. In addition, the hand brake was not set because the driver reported it was inoperative, although it appeared to be working normally after the mishap. Inflight cargo leaks have been on the increase also. On exercises, self-contained fuel tanks on vehicles, ground support equipment, and helicopters are big offenders. On regular channel missions, spills have come from engines and other equipment containing residual fluids which were not properly sealed or purged. Other dangerous or flammable liquids were found to be improperly prepared or documented. Although it remains the "user's" responsibility to properly prepare cargo for air shipment, healthy skepticism by both aerial port people and aircrew loadmasters can catch many potential hazards before they cause flight mishaps.

WARM UP YOUR LONG JOHNS, winter is on the way. Even MAC crews stationed in the warmer climes frequently find themselves flying into frosty areas of the world this time of year. It's time to review winter weather procedures for you and your aircraft, so you won't be left out in the cold. As a reminder of just how frigid it can get, refer to the accompaning wind-chill chart.

Wind Speed		Cooling Power of Wind Expressed as Equivalent Chill Temperature																				
Knots	mph	Temperature (°F)																				
calm	calm	40	35	30	25	20	15	10	5	0	−5	−10	−15	−20	−25	−30	−35	−40	−45	−50	−55	−60
		Equivalent Chill Temperature																				
3-6	5	35	30	25	20	15	10	5	0	−5	−10	−15	−20	−25	−30	−35	−40	−45	−50	−55	−60	−70
7-10	10	30	20	15	10	5	0	−10	−15	−20	−25	−35	−40	−45	−50	−60	−65	−70				
11-15	15	25	15	10	0	−5	−10	−20	−25	−30	−40	−45	−50	−60	−65	−70						
16-19	20	20	10	5	0	−10	−15	−25	−30	−35	−45	−50	−60	−65								
20-23	25	15	10	0	−5	−15	−20	−30	−35	−45	−50	−60	−65									
24-28	30	10	5	0	−10	−20	−25	−30	−40	−50	−55	−65	−70									
29-32	35	10	5	−5	−10	−20	−30	−35	−40	−50	−60	−65										
33-36	40	10	0	−5	−15	−20	−30	−35	−45	−55	−60	−70										
Winds above 40 mph have little additional effect.		LITTLE DANGER					INCREASING DANGER (Flesh may freeze within 1 min.)															

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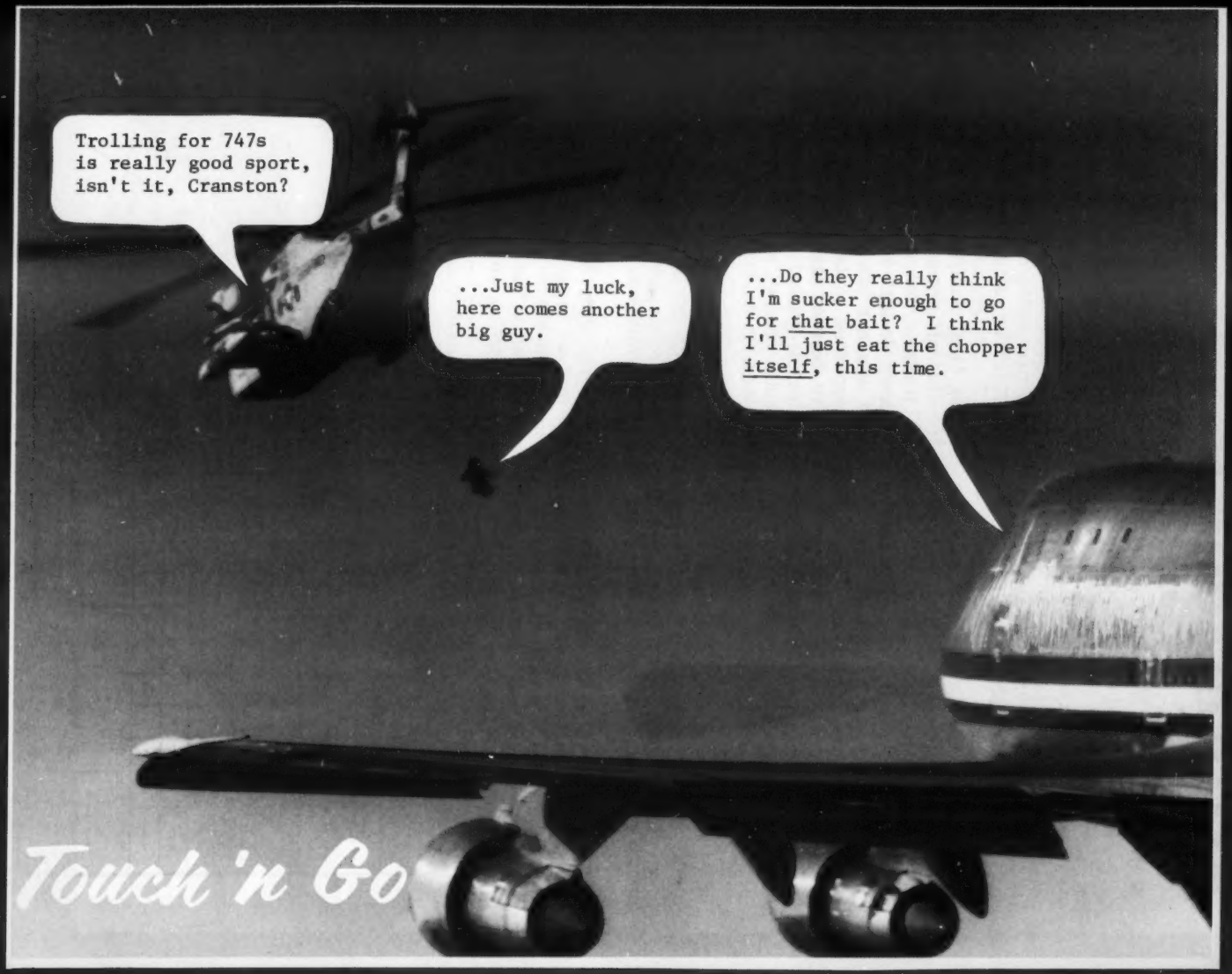
Trolling for 747s is really good sport, isn't it, Cranston?
...Just my luck, here comes another big guy.
...Do they really think I'm sucker enough to go for that bait? I think I'll just eat the chopper itself, this time.
Touch 'n Go